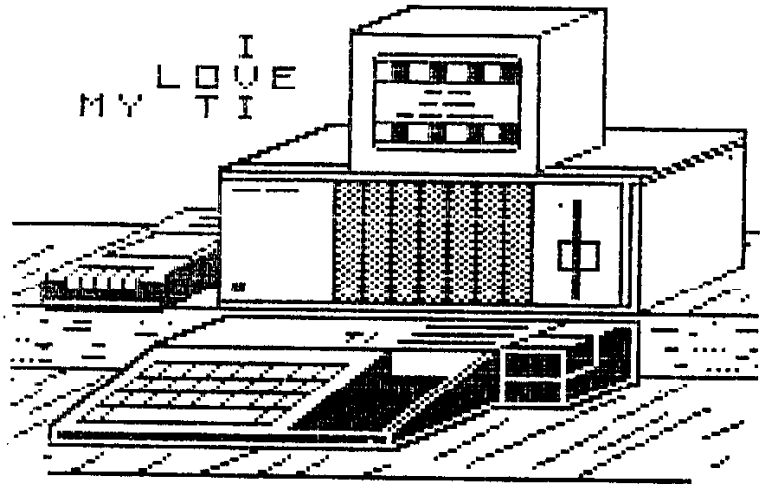
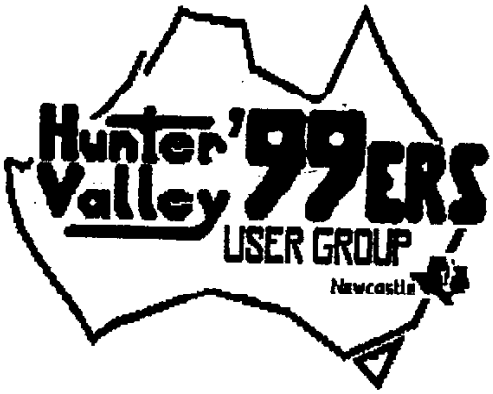
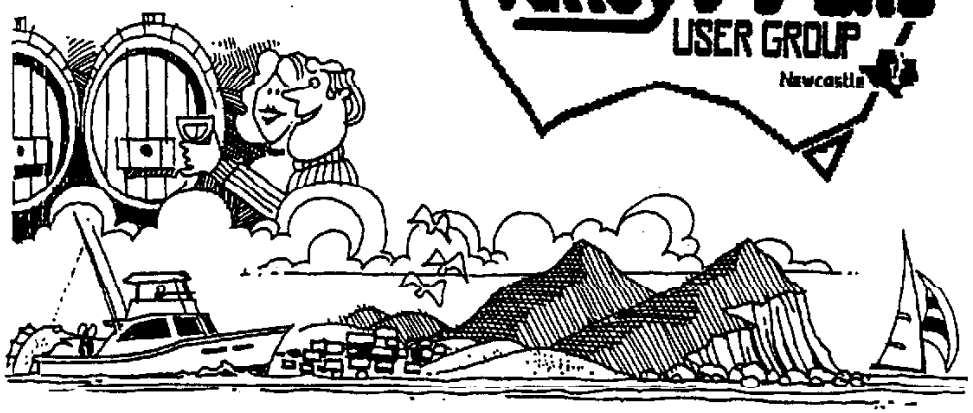
HUNTER VALLEY 99ERS USERS GROUP

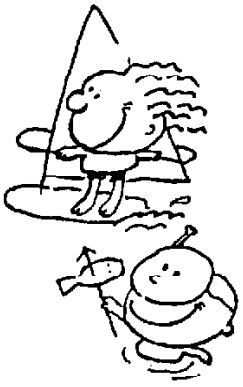
HOME COMPUTER NEWSLETTER



MARCH 1989







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Please include along with your article sufficient information to enable the file to be read by the Editor eg. File Name etc. The preferred format is 35 columns and page length 66 lines, right justified.

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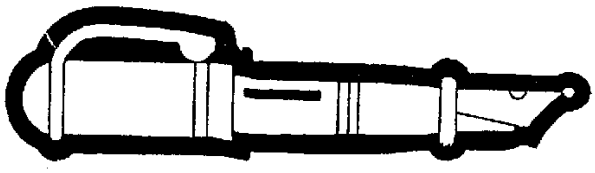
PRESIDENT'S



with

Al Lawrence

Wonderful it was to see that not everyone got lost at last month's meeting, as the new rooms are not far from the usual venue. They will enable us to have more activity each night.

As there are a lot of new members with expanded systems and thus some newcomers to TI Writer, F'web etc we hope to have items of interest in the small room next to the main meeting room, starting with how to set up and use your ramdisks, QED module, customising F'Web, TI Artist, Printers Apprentice, anything else you did not know but were afraid to ask. There will be capable people available to assist you get the most from your investment.

WORKSHOPS

Let some Committee person know if you would like another - give us some feedback as to what you would like to see in the way of events. If sufficient interest is indicated we may have another console workshop again SOON. How about a Saturday arvo with a Sausage Sizzle as well?? Let a Committee member know A.S.A.P.

AGM!!! and elections.!!!

Committee positions will all become vacant at the AGM in June - only 3 more general meetings away. NOW is the time to start thinking of standing for a position on the committee and having a say on how the HV99'ers is run. So why not consider helping your group to continue?

There are a few positions that will soon need replacing. It has been policy everyone has the opportunity to help the group, and most who can, do. So if you are a GUNNER why not be a DOOER!! This can be rewarding, challenging and was how the group originally got started back in JUNE '85.

I will not be available for any position on the next committee, but will continue to support the group from the underground cellar.

SOCIAL NIGHT OUT

Give Noel Cavanagh your name soon.

You will enjoy yourself if all the other events are anything to go by.

FAIRWARE.

We at the HV99'ers are collecting group donations to sent to various authors as we know how costly it is to buy and send individually. We will continue this policy to help support them in the future by collecting donations and forwarding them on in bulk.

NB. We only sell disks for cost of MEDIA plus nominal COPY FEE and the ONUS is on you the USER to forward any FAIRWARE,FREEWARE, SHAREWARE or by WHATEVER name it is distributed under, to the AUTHOR by any means. That is why we do not charge $ 5.ØØ for a disk,as then the recipients do not think we pass the EXCE$$ to them by some mysterious channel.

Communication Special.

Next month we will have a Cheque in the mail for MASS TRANSFER to Stu Olson, so no matter which Version you use, if you have not sent your donation to Stu NOW IS THE TIME.

Stu Olson a SYSOP and V.P.of the Pheonix group has been supporting the TI Communicators from the early days.

Most of the User Group Editors get some electronic mail to fill the pages of the Newsletters we all enjoy reading. Not everyone has a MODEM but as we see, benefits flow on to every member.

The disk is in your Library. Ask our Librarian for your copy now.

So why not all AUSTRALIAN users or if you are a small group send your donation to us to pass on? This will be acknowledged and you will help us encourage another great PROGRAMMER to stay with TI'ers, so

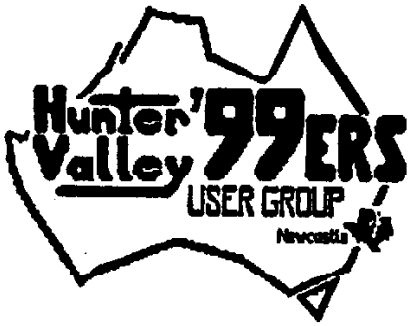
if you use it or any other and have forgotten, you will never be too late as we will pass monies on so long as you make clear which Fairware you sent it for. Better still send one LARGE cheque for us to distribute to several if you make use of more than ONE!!! Just let us know the Authors and also how to divide it up,as well as any comments on the programs use to you. See elsewhere for more information to support those who support us.

QUEST RD-200

A few spare QUEST RD2ØØ RAMdisk boards are still available from the original order. All of the fully built and socketed boards are sold, but if you want one of the bare boards to be socketed up for you, let Al Lawrence know as soon as possible - phone 486509

The price of a built up board is $132 - you have to buy your own 32k #62256 chips (17 required to give 512k RAM + 32k memory expansion), 1 #6264 & three batteries. The bare board (unsocketed) is $5Ø. Add $5 for postage and packing where required.

There are also a few QED 32k module boards available too, so if you are interested be quick!!



RANDOM BYTES

with

BOB CARMANY

Let's start out this month with an "invasion" into the realm of the consumate "disk hacker" --Will McGovern. If you have ever looked at sector Ø on a disk and wondered exactly what you were looking at, this might be of some help. The fact is, even switching the display from hexadecimal to ASCII doesn't help when it comes to explaining what you are looking at. Well, let's take a look!

Most of the information about the disk is crammed into the first 2Ø bytes of the disk. But there is other important information scattered on sector Ø and sector 1 as well. Let's start with those first 2Ø bytes, though (all values are in hex).

Ø - 9 are the disk name and the full 1Ø characters are used. If the diskname is less than 1Ø characters, $t is padded out to the full length with the space character (>2Ø).

1Ø - 11 is the designation for the number of sectors (total) on the disk. >168 is for 36Ø sectors (SSSD) and >Ø2DØ is for 72Ø sectors (DSSD).

13 - 16 is "DSK" in hex. DSK is installed when the disk is initialized by TI (and third-party) controllers and is one way that the controller has to tell if the disk is properly formatted.

17 is the designation for the number of tracks per side (>28 for 4Ø tracks).

18 is the designation for the number of sides per disk (ie. >Ø1 for single-sided and >Ø2 for double sided).

19 is the density byte (ie. >Ø1 for single density and >Ø2 for double density).

As a footnote, bytes 56 - 255 indicate used sectors and if all

these bytes are filled with "FF" then you have a full disk.

I think that just about everyone by now knows that you don't have to go through the procedure in the TI-Writer manual to access the various options in the EDITOR. For example, it isn't necessary to type in (S)earc(H) and then (Find(S)tring to get to the "Findstring" function of the EDITOR. You can get there directly by typing in (F)ind(S)tring from the function command line. If you didn't know it before, you do now!!

While we are on the subject of TI-Writer (and FUNNELWEB) here is an idea for you to think about. Let's say that you are writing a l-o-n-g article or digression about the wildlife in Queensland. It is much easier to type in 'Qld' in place of the full-blown word itself -- in fact, a savings of 7 keystrokes. Why not do that and then use (R)eplace(S)tring to replace it with 'Queensland' when the document is finished? It is certainly easier to press CNTRL-2 a couple of times than to type in that same word over and over again.

Another simple tip is clarified when you think about why the space character is illegal in a disk filename. The controller passes the disk name until it comes to the delimiting character which happens to be --you guessed it-- the space!

So when entering a filename from the EDITOR, it really isn't necessary to delete all of the 'extra' characters at the end of the filename that you have just typed over. Type in a space and be done with it. It may look funny in the FORMATTER mailbox in FWEB but it works just fine nonetheless!

With apologies to Jack Sughrue, one thing that I have found to save time and effort in keeping up with my correspondence is a disk of templates. Basically it is a series of letterheads with everything complete except the date. The same is true for the heading for 'Random Bytes' and some of the other things that I do from time to time. There is a template for the reviews that I do every now and then for MICROpendium and other projects. These are saved on a single disk and then used as the need arises.

It really isn't 'necessity' that is "the Mother of invention" but actually LAZINESS!!

Well, that does it for this month's column. Anything you would like explored? If so, drop me a line at 1504 Larson St., Greensboro, NC 27407 and I'll see what I can do about putting in in a column.

IN THE NEWS

WHATS NEW IN THE TI WORLD

compiled by

BRIAN WOODS

Another month passes, bringing us a little closer to the Annual General Meeting in June. As Al Lawrence points out in his 'President's Pen' column NOW is the time to start thinking about your role in the group, and what you can do to help the group prosper and grow.

Due to extensive house renovations, Albert is again unable to provide his regular Secretary's Report, but rest assured that he will be back in full swing once he can get at his computer again!

TI/BASE

For those in the group that purchased this data manager and are still struggling to come to grips with it, all is not lost! An excellent series of articles on setting up a data base and manipulating the data appears in TopIcs, the newsletter of the LA Users Group, commencing with the October 1988 issue. The series is written by Bill Gaskill, and takes you step by step through the program. The newsletter is available from our Publications Librarian, so if you are interested in learning more about it make sure you read these articles.

PRINT WIZARD

From the August issue of the Mid South Users Group in the US comes this outline written by Jonathan Leslie:-

"Print Wizard is a program that will allow you to print out not only greeting cards and full page signs, but create letterheads for personalized stationary, and banners as well! It requires either a 4A with minimum 32K RAM or a 9640, one disk drive (though two are recommended to reduce disk swaps) and either a Prowriter, Epson FX or Gemini or compatible printer..."

"...In the card program you may choose up to one art, font and border each for the front and inside (there are 11 border styles, 6 fonts and 27 graphics included in the package). With the sign program up to two arts and fonts and up to one border. With the banner program up to two arts and up to one font. With the letterhead program you can select up to two arts and fonts..."

"...One thing I should mention is that when inputting your text is that you have 6 lines to fit your text into. How many and what type of characters you may fit on a line is determined by the font you use..."

"...There are a couple of deficiencies with the program however. One is that you have no preview screen to view your layout with border, art and text to see if anything needs to be changed... since printouts take a while, a preview screen would save time and prevent exasperation. The other major problem is that you cannot save a layout to disk!"

"Apart from the deficiencies just noted, I really enjoyed using Print Wizard. It is very easy to operate and with a wealth of TI-Artist instances & fonts you can convert, an almost infinite variety of printouts can be made."

Print Wizard can be purchased directly from:-
Trio Plus Software
PO Box 115
Liscomb IA 50148
USA
for $US24.95

or
Tenex Computer Express
PO Box 6578
South Bend IN 46660
USA
for $US19.95

Pr EDITOR

An advertisement in MICROpendium details some of the functions of this new utility:-

"Pr Editor is the ultimate text editor for the TI! Pr Editor is the perfect replacement for the E/A or TI-Writer Editor. This incredibly fast program is loaded with features:

* Will allow you to have up to 2 files in memory at once. You can switch between them at the touch of a key.
* When switching between files the environment in each area is preserved - when you switch back & forth you are returned to exactly the point in either file that you were last at.
* You can cut and paste between files.
* You have a full range of text editing functions.
* Offers many block manipulation functions - move copy & delete blocks. Forget working with line numbers - simply mark the start & ending lines of the text you want to work with.
* Includes full multi-directional search and replace commands.
* Built in disk cataloger
* Has an 'as is' mode that lets you include in your file the exact ASCII character you type from 1-255.
* You can view a file while editing 2 others.
* Works on the Geneve in 80 columns or with any 4A 80 column card.
* Will take full advantage of Geneve keyboard.
* Allows you to use memory available in a Supercart, SuperSpace or Mini-Memory module for even larger text buffer. 22K Buffer standard.
* Can be completely customized - you can permanently set for any copy the left & right margins, screen colors, cursor speed in various operations, number of columns it windows over (1-40 at a time) as you type, tab stops, video display available (40 or 80 columns) and finally you can re-assign ALL the functions to any keys that you like."

This program is available from:-
Asgard Software
PO Box 10306
Rockville MD 20850
USA
for $US19.95 + shipping & handling.

TRIAD

From the December issue of TILT, the newsletter of the Eugene Oregon Users Group comes this download from the GEnie network.

"There are numerous editors, disk managers and terminal emulators available to the TI community, but up till now no one has put them all together into one program which is entirely memory resident! Triad contains a complete disk manager, a 40 column editor, a terminal emulator and an E/A 5 program loader, all of which are in memory at the same time. Plus it contains all its configuration routines and still manages to squeak out a 13K buffer for the terminal emulator or editor."

Triad's specific features include:-
DISK MANAGER - the customary copy, delete, rename etc plus sweep disk, viewfile - even if you are online!
EDITOR - load/save any DV80 file, print file, edit (of course!), save to special "terminal emulator buffer" for uploading later. If you enter the editor from the terminal emulator, your latest buffer is available for your perusal.
TERMINAL EMULATOR - You may set up a log file to capture buffer. The filename can be auto-incrementing if you prefer. You may purge or write out the buffer whenever convenient, and when you are finished with the terminal emulator the remainder of the buffer is written to the log, assuming you have set one up. And even if you forget to set up a log one keypress will invoke the "Change Mind in Middle of Stream" feature and dump the current buffer to disk.

File transfer features are the usual: ASCII uploads (stream or line-by-line, with/without added linefeed character), Xmodem uploads/downloads either with CRC or checksum error-checking (CRC is default). An additional feature is the ability to upload text files directly from the buffer without having to get the file from disk while online. The Xmodem routines will save alien files in DF128 format. Other features of the emulator are a disk catalog, on the spot reconfiguration of settings, and a window-back option which lets you review the entire buffer and also shows you the amount of buffer space available.

Whenever you are finished with the program you can load in most E/A 5 type files, including the latest version of Archiver, Funnelweb etc. Although Triad can easily be placed on a ramdisk with its self patching loader, it was designed with the single floppy drive user in mind."

This program is available from:-
Genial Computerware
PO Box 183
Grafton MA 01519
USA
for $US16.50 + $US2 postage

THE "ZENOBOARD"

From the West Penn 99'ers newsletter via the January issue of "MUNCH" comes information on new hardware:-

"Have you ever had your console lock up after you had just about finished keying in a long XB program, or have you had a game running under XB just stop when you were about to get your all time best score, or has a utility stopped as you were just about done entering the last of the names and addresses?"

"The Zenoboard will accept chips from your XB cartridge, as well as a 32K Byte Static RAM chip, a battery backed clock circuit and the chips from your speech synthesizer. It will also have GROM chip locations, so you can install you most used GROM based cartridges right IN YOUR CONSOLE!..."

"Eric Zeno, the designer of the board, plans to offer this board for less than $15. The intent here is to find out if there is enough interest or need for the board for him to continue. If you would like to see one of these, and would support it, write or call Eric at the address below."

Specifications:-
* Fits inside console above CPU board and solders directly to back

of GROM connector, with a few wires to the CPU board.
* Requires no additional power.
* Includes reset circuit.
* Can be configured or expanded as the user requires.
* Supports 32K Static Ram.
* Supports battery backed clock.
* Supports speech synthesizer.
* Supports XB.
* Supports additional switch selectable GROM.
* Do it yourself low cost.
>> Some technical assembly required

If you are interested contact:-
Eric Zeno
414 Highland Road
Pittsburgh PA 15235
USA

Do not send money at this stage.

RGB INTERFACE
From the Adelaide users Group comes the following:-

"Anyone wishing to purchase an RGB interface to run a color monitor can contact the group to place an order. Colin Cartwright will be producing a unit with TTL & Analog output for $85, payable with the order."

For further info or to order contact:- Fred Cugley
26 Suffolk Avenue,
Brahma Lodge
SA 5109
phone 08-2583499

HORIZON P-GRAM CARD
From the February issue of ROM, the newsletter of the Users Group of Orange County, USA comes details of this new card.

"...The P-Gram card is a PE Box card which allows the saving and loading of modules from disk. It also has a memory editor which lets you customize your modules, or even create your own. It is available either in a kit form or assembled and can be obtained with an optional clock."

"The kit comes complete with a cleanly etched printed circuit board, and all parts needed... You also receive a disk of programs for the DSR, a disk of source code for the DSR's and either a manual on disk or two manuals already printed."

"The first manual is a construction manual by John Guion, the card designer... The other manual is an operating manual by Robert Jones, who wrote the software, and John Guion. It is also excellent and contains full instruction for saving and modifying modules, assembly code for producing your own modules, and accessing the DSR in several ways. More code and assembly language than I could handle, and more tech info about the operating system than you really need to run the card..."

The card is available from:-
Bud Mills Services
166 Dartmouth Drive
Toledo Ohio 43614
USA

P-Gram Kit $150 + clock $20
Assembled $180 with clock $200

Add $15 for airmail postage - all prices in $US.

Well, that's all the news for this month - quite a lot of good hardware & software is still being released for the TI, so apparently there is still plenty of life left in computing the TI way!

Till next month...

ASSEMBLY SQUEEZING

PART 5

TONY McGOVERN

Very often individual bits in a byte or word are used to flag some condition. The 9900 status register does this all the time and the various conditional jump instructions operate on various combinations of these. Now if you are writing your own code you usually end up using a whole word to store each Boolean flag that in principle needs only one bit, just because it costs more to pack the flags one bit at a time than it saves. There are some intermediate cases however. Mostly you will find these when dealing with system routines and the GPL status byte at >837C. Remember that in GPL the poor old 9900 is weighed down by the task of having to emulate in software an imaginary 8-bit processor. Another situation is exemplified by the directory (SD and QD) routines in Funnelweb. Here the full directory information for up to 127 files must be held in memory (VDP in this case) and yet compete as little as possible for machine resources with other programs. To do this each directory entry is encoded into 14 bytes, which means a certain amount of bitpicking to unravel each entry for display. With 127 entries allowed for, there is scope for the trade-off with the extra bit-picking code. No doubt you will have your own favorite problem.

Suppose you want to check the equals bit in the GPL status register, say after a keyscan or DSRlink call. Your options are a little bit confined here as most of the bitpicking operations assume one or both operands are in a register. You have here to concentrate attention on a particular bit. One way is to set all other bits to zero and the examine the byte (or word or register) to see if it is null. The most general instruction for this is SZCB (or less commonly SZC). You also have to have a mask byte as data somewhere

```
SZCB @BDF,@GPLST
JNE  NEWKEY
```

where BDF is the label of a byte with only bit 2 zero, >DF being the appropriate value. This takes 4 words plus a data byte somewhere. An interesting variation on this that can save space if you you have your own BLWP @KSCAN called from several places is to set this flag before leaving the routine.

```
KSCAN  DATA KWKSP,KSCN1

KSCN1  LIMI 2
       LIMI 0
       LWPI GPLWS
       MOV  R11,@KWKSP+22
       BL   @>E
       LWPI KWKSP
       MOV  R11,@GPLWS+22
       SZCB @BDF,@GPLST
       STST R15
       RTWP
```

The LIMI instructions are to enable interrupts every keyscan and may be omitted if this is not desired. The next few instructions call the console keyscan routine. Saving and restoring R11 of the GPLWS is usually advisable, but not always necessary. The SZCB sets the CPU status bit as before and STST reads the status into R15 just so RTWP can put it back into the CPU status again. Now on every call to KSCAN it need only be followed by a JEQ or JNE to test the GPL status for a repeated key as in

```
BLWP @KSCAN
JNE  NEWKEY
```

If this level of byte saving is not called for, a small saving can be made by doing something like

```
MOVB @GPLST,R0
SLA  R0,3
JOC  NEWKEY
```

As each bit is shifted out it is placed in the Carry status bit, and can be tested with a JOC instruction. This saves a word over checking the bit with

```
MOVB @GPLST,R0
ANDI R0,>2000
JNE  NEWKEY
```

but this last code has the advantage that does an implicit CLR of the register if the jump is not taken. It all very much depends on the details just what is best to do.

JOHN BIRDWELL'S

DISK UTILITIES

AN OUTLINE

by

BRIAN WOODS

This month's Fairware Author's Donation is going to John Birdwell, author of Disk Utilities V4.12 (DSKU). Those of us that have used the program for some time have already sent our donation over to John, haven't we?? If you have only recently upgraded to disk drives may not as yet have had the opportunity to try the program, but do yourself a favour, GET IT NOW!! After Tony McGovern demonstrates this utility at this month's meeting we will be collecting money towards the bulk donation, but if you couldn't make the meeting, don't worry you can send your donation to the Secretary who will send all the money collected along with the names of the people making donations to John towards the end of the month. Make sure your name is on the list!

So what is DSKU? This article is aimed at those people who have recently purchased the utility or those who I am about to convince that they should have it. As well as being a disk & file manager, it's a sector editor & a file editor. The main menu lets you choose from the following options:-

1) File Utilities
2) Disk Manager
3) Disk Utilities
4) Sector Utilities
5) System Setup
6) Load FW

If you select File Utilities you are offerred the following options:-

1) File Ops
2) File Recover
3) File report
4) File Editor
5) Find String
6) File Compare
7) File Print

File Ops allows the usual file handling operations; Copy, Delete, Rename, Protect/Unprotect, Move, View. Another option A(ll) allows you to copy every file on the disk, thus enabling you to 'unfracture' files. The View option allows viewing of ANY DV or DF file, whether DV 80, 132, 63 etc.

File Recover allows you to recover files that have been deleted PROVIDED THAT the file has not been written over.

File Report first asks for the filename then displays the file's length in sectors & bytes, file type (DV 80, Program, etc), FDR (File Descriptor Record - the sector where all the info on that file is stored is located on the disk - usually located on sectors >02 to >21) & the start & finish sector of the file on the disk.

The File Editor option allows editing of a particular file. The editing may be done in either Hex or ASCII. Once in the edit mode, any alterations are shown in inverse video and can only be written back to disk by pressing CTRL W. The file editor option can also be taken in the File Ops section by pressing E next to the filename.

Find String allows you to find the instance of a particular string in a file. If you wanted to change, for example, the screen color in a program and the instructions tell you that the current screen/text colors are F4 and you want them changed to F5, you select this option and input the string you want to find ie F4 and once found the byte can be altered.

File Compare does exactly what it suggests, it compares files between disks to show if the files are exactly identical.

File Print outputs all the sectors covered by the named file to the printer.

The DISK MANAGER selection leads to the following sub-menu:-

1) Initialize Disk
2) Copy (Backup)
3) Validate Disk
4) Rename Disk
5) Reset Disk

The first two options are self explanatory. The Validate Disk option checks the disk for bad sectors. This test in a non-destructive type so any data already on the disk is not destroyed. Once completed the disks bit map may be altered to show the shortfall in sectors due to any bad sectors. Rename disk is self explanatory but at the same time you may alter the date shown on the disk. The Reset disk option allows you to 'sweep' the disk, making it appear to the system that it has been freshly initialized.

The DISK UTILITIES section displays the following sub-menu:-

1) Disk Report
2) Directory/Comment
3) Find String
4) Compare Disks

The Disk Report prints out the following information:-

a) The length in sectors & bytes of each file on the disk.
b) Start & end sectors of each file. If the file is fractured it shows all sectors involved.
c) Comment line details
d) The sector where the FDR is located.

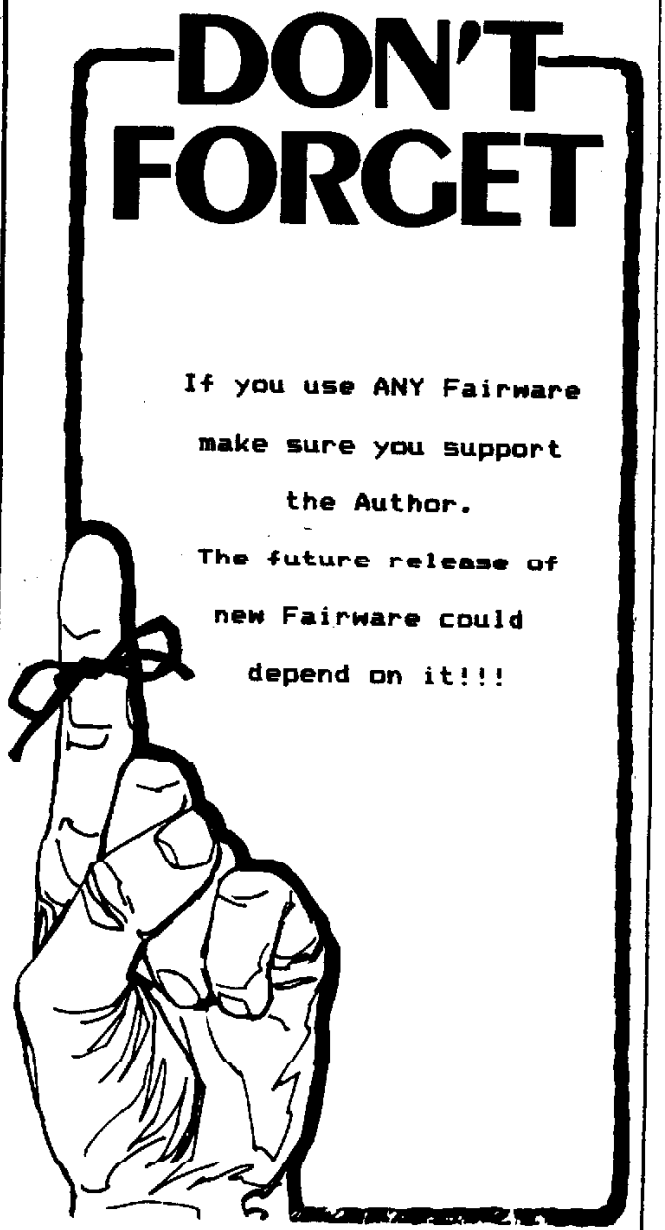
The directory/comment option is a beaut! It allows you to enter a brief comment about each file if you require it. It is handy when used on a disk with a lot of files on it. I have gone through my Funnelweb disk and written what each file actually is, making it easier when Tony brings out a new version - I know exactly what each file on my old disk is. In the disk report the comment line is printed out so I have a hardcopy of what each file does. Great stuff!!

The Find String option is the same as described under File Ops, but instead works on the entire disk. The same applies to the Compare Disks option.

The Sector Editor section is what it says and more! As well as being able to edit sectors you can search for & replace strings, compare sectors between two disks & print out sectors. The program allows two formats for printouts. You can print out in hex on the left side of the page & in ASCII on the right or have them printed out one below the other.

Many of the defaults such as printer type, screen/text colors & print modes can be permanently altered by using the file editor. Full details are given by John in his very comprehensive instructions.

All in all this is a very impressive 'Disk Utility' & should be useful to anyone who does more with their computer than play games. It is available in the library now - and don't forget the Fairware Donation!



IMPACT/99

BY JACK SUGHRUE
Box 459
EAST DOUGLAS, MA 01516

IMPACT/99 BLUE RIBBON 1989 WINNER

IF THIS ANNUAL AWARD COULD BE GIVEN TO THE SAME COMPANY TWO YEARS IN A ROW, ASGARD SOFTWARE (WITH ITS INCREDIBLY VARIED AND IMPRESSIVE CATALOG) WOULD CERTAINLY BE VERY MUCH IN CONTENTION AGAIN. SO I'M GLAD I DIDN'T HAVE TO MAKE THAT DECISION THIS YEAR.

INSTEAD, IT WAS A CLEAR CHOICE: MYARC IS THE WINNER OF THE 1989 IMPACT/99 BLUE RIBBON AWARD.

MYARC IS ONE OF THE FEW COMPANIES STILL MAKING ANYTHING FOR TI OWNERS ON A STEADY BASIS. BUT IT ISN'T JUST ANYTHING THAT THEY ARE MAKING; THEY HAVE GIVEN US THE MOST POWERFUL HARDWARE AND SOFTWARE THAT EXISTS FOR US. THEY HAVEN'T JUST PROVIDED ENHANCEMENTS; THEY HAVE GIVEN US A FUTURE.

MYARC (THE VISION, THE DREAM, OF FORMER TI EMPLOYEE LOU PHILLIPS) HAS BEEN AROUND A LONG TIME. SINCE 1982, ACTUALLY, WHEN LOU DEVELOPED WINCHESTER HARD-DISK CAPABILITIES WHICH SOLD BETTER IN OTHER COUNTRIES THAN HERE (AS WE WERE MOSTLY ALL FLEDGLINGS AT THE TIME). LATER HE PRODUCED A NOT-VERY-SUCCESSFUL COMPETITOR TO THE TI PE Box (STILL FLOODING THE INTERESTED MARKET AT THE TIME). SO HE MOVED INTO THE CARD DEVELOPMENT. AND THERE MYARC (WHICH IS A MUTILATED ACRONYMIC FORM OF "MICROCOMPUTER ARCHITECTS") BEGAN TO BLOSSOM.

FROM A PERSONAL VIEWPOINT (AS THIS COLUMN HAS ALWAYS BEEN - FOR BETTER OR WORSE), MYARC AND I HAVE HAD A PERFECT RELATIONSHIP. I OWN LOTS OF THEIR PRODUCTS, AND I HAVE NEVER HAD TO SPEAK TO OR WRITE TO ANYONE ABOUT THEM. THEY HAVE BEEN EASY TO USE AND HAVE NEVER BROKEN DOWN. AND THEY HAVE MADE MY COMPUTING LIFE MUCH RICHER.

A FEW YEARS AGO MY TI DISK CONTROLLER CARD WAS BEHAVING ERRATICALLY. LOTS OF MY FRIENDS RECOMMENDED THE MYARC CARD.

GOT IT.

LOVED IT FROM THE MINUTE I PULLED OUT MY OLD CARD AND PLUGGED IN THE NEW. IT IMMEDIATELY MADE MY ORIGINAL SHUGART SSSD INTO A DSSD DRIVE, SO I DOUBLED MY POTENTIAL ON EVERY DISK AND NO LONGER HAD TO "FLIPPY" ANYTHING.

NOT ONLY DID THE MYARC CONTROLLER WORK SMOOTHLY, BUT IT WAS FASTER THAN MY OLD CONTROLLER, AND IT HAD INSIDE A BUILT-IN DISK CATALOGUER WHICH COULD BE ACCESSED FROM ANYWHERE BY CALL DIR(#). I FOGET HOW WONDERFUL THIS IS UNTIL I GET TO SOMEONE ELSE'S NON-MYARC TI.

AND IT HAD MYARC'S LEGENDARY DISK MANAGEMENT SYSTEM. STILL MY FIRST CHOICE AMONG A PILE OF EXCELLENT SYSTEMS AND ONE THAT REMAINS CONSTANTLY CONFIGURED IN FUNNELWEB ON MY RAM. (BUT I'M GETTING A BIT AHEAD OF MYSELF.) LOTS OF PROGRAMMERS LEARNED A LOT OF TECHNIQUES FROM THIS DM, BUT FOR USERS LIKE MYSELF IT OPENED UP A LARGE WORLD (PARTICULARLY WITHIN ITS FUTURISTIC UTILITY MENU).

NOW MY DRIVE WAS OLD, SO I THOUGHT I'D GET A NEW DSDD ONE AND ADD A POWER SUPPLY FOR MY OLD ONE. I DID. AGAIN, THE CONTROLLER TOOK EVERYTHING IN STRIDE. SWITCHED FROM ONE KIND OF DRIVE TO ANOTHER WITH NO HEAVY BREATHING.

AS MY COMPUTER MADNESS GREW I KNEW I'D NEVER BE HAPPY WITHOUT A RAMDISK OR SOME EXTENDED MEMORY. MYARC HAD JUST COME OUT WITH THEIR 512 CARD TO GO ALONG WITH THEIR 256 AND 128 CARDS.

AS I HAD SUCH GREAT FORTUNE WITH MYARC, I BOUGHT THEIR 512. TOOK OUT MY 32K CARD, PLUGGED IN THE NEW. JUST LIKE THE CONTROLLER, IT WORKED PERFECTLY FROM THAT MOMENT.

I HAD A LARGE RAMDISK THAT I COULD PARTITION AS A BUFFER FOR MY PRINTER AND HAVE LOTS OF OPTIONS AVAILABLE. BUT DID I REALLY NEED ALL THAT SPACE? I DIDN'T THINK SO AT THE TIME. I WONDERED WHY I HADN'T PURCHASED THE SMALLER CARDS WITH MY HARD-EARNED PENNIES.

HOWEVER, WITHIN A COUPLE WEEKS, I HAD ALL THE FUNNELWEB AND PLUS! FILES I USE REGULARLY (AND SOME OTHER VERY SPECIFIC UTILITIES AND GAMES) ALL ON A RAM LOAD WITH AN AUTOMATIC 80K SET ASIDE FOR BUFFING (WHICH TURNED OUT TO BE ONE OF THE GREATEST ENHANCEMENTS I EVER ADDED TO MY TI).

THE RAM PORTION IS WONDERFUL TO OPERATE. EVERYTHING I NEED IS THERE AT THE MOMENT I WANT IT. ALL THE WORD PROCESSING TOOLS. ALL THE ASSEMBLY TOOLS. ALL THE UTILITIES, IN SHORT, THAT I ALWAYS USED TO LOAD ONE-BY-EACH AS NEEDED. IN THOSE DAYS THE THING NOT IN MEMORY WAS THE THING I NEEDED MOST AT ANY GIVEN TIME.

AND MY CONTROLLER? WELL, I JUST DESIGNATED MY 512 CARD AS DRIVE 3, AND IT WENT ABOUT ITS BUSINESS AS IF I WAS HARDLY GIVEN IT AN ADULT TASK. ITS "HO-HUM" MANNER SHOWED ME THAT THE DESIGN OF THE THING WAS INGENIOUS. NO FUSS. NO MUSS. NO BOTHER. I LIKE THINGS THAT WAY.

NOW, HERE I WAS WITH A MYARC-STUFFED FULL-BLOWN SYSTEM WHEN MY EXTRA SSSD ORIGINAL DRIVE (IN THE POWER-SUPPLY BOX) DIED AFTER MUCH FAITHFUL SERVICE. SIX YEARS IS A LONG TIME, I'VE BEEN TOLD. PARTICULARLY FOR THE KIND OF USE I GIVE THE DRIVES. SO I BOUGHT A COUPLE DSDD HALF-HEIGHTS ON SALE, PUT THEM IN THE P-Box, PUT THE DSDD FROM THE BOX INTO THE

ADDED POWER SUPPLY, AND RAN MY SOFTWARE. BUT ALL MY SOFTWARE HAD BEEN GEARED TO MAKING DRIVE 3 AS MY RAMDISK. MY CONTROLLER WINKED AT ME. "CALL THE EXTRA DRIVE DRIVE 4," IT SAID, "AND KEEP THE RAM AT 3." I TOOK ITS ADVICE. NOW I HAVE ALL FOUR DRIVES (WITH 512 AT 3) OPERATING QUICKLY AND FLAWLESSLY AND WONDERED HOW I EVER DID WITH THREE DRIVES OR TWO. CAN'T EVEN IMAGINE HOW I SURVIVED WITH ONE.

(THERE'S SOMETHING VERY OBSESSIVE ABOUT THIS KIND OF BEHAVIOR.)

ALTHOUGH I AM THE ULTIMATE NON-TECHIE, EVEN I CAN PLUG IN CARDS AND (AS A LAST RESORT) READ MANUALS. MYARC MAKES IT SO EASY, YOU DON'T HAVE TO READ THE MANUALS IN MOST CASES, THOUGH THEY WARN THE USER NEVER TO DO ANYTHING WITHOUT FIRST READING THE MANUAL COMPLETELY.

AFTER A FEW YEARS OF BLISS WITH MYARC, I WAS PLEASED AS PUNCH TO LEARN THAT THEY WERE DEVELOPING A NEW COMPUTER THAT WOULD BE COMPATIBLE WITH THE TI. NOT JUST AN UPGRADE. BUT A NEW COMPUTER.

WELL, LIKE ALL (WITHOUT EXCEPTION) NEW PRODUCTS IN THE COMPUTER INDUSTRY WORLD WIDE, THE ANNOUNCEMENTS OF ITS COMING DRAGGED ON AND ON. BUT EACH STAGE WAS PUBLICIZED TO THE POINT OF ANNOYANCE. PROBABLY WHAT WAS MOST ANNOYING WERE THE DOOMSAYERS. THEY DUMPED ALL OVER MYARC FOR THE DELAYS. IT'S TOO BAD, REALLY. THE KINDS OF STUFF COMING OUT FOR STILL-MANUFACTURED COMPUTERS DOES NOT RAISE THE IRE WITH THE ENDLESS DELAYS BECAUSE THERE IS SO MUCH ELSE BEING MANUFACTURED AND RELEASED. WITH MYARC, IT WAS THE ONLY SHOW IN TOWN. SO IT GOT SPOTLIGHTED. AND, IN SOME PEOPLE'S MINDS, GOT A BAD REP. NOT DESERVED. NOT DESERVED AT ALL.

IF YOU'RE THE ONLY COMPANY MAKING A COMPATIBLE UPGRADE FOR AN ORPHANED COMPUTER, YOU ARE TAKING A GREAT RISK TO BEGIN WITH. YOU GET NO SUPPORT TO CONTINUE WITH. AND YOU GET TO LIVE WITH WHAT YOU HAVE CREATED TO END WITH.

WHAT MYARC ENDED WITH IS A MINOR MIRACLE. THE GENEVE (9640) COSTS ABOUT TWICE WHAT THE KEYBOARDS SOLD SEPARATELY COSTS. LESS THAN TWICE WHAT THE DIFFERENT RAMDISKS COSTS. FOR UNDER $500 99ERS CAN NOW BUY A COMPUTER THAT WAS ALMOST 100% COMPATIBLE WITH EVERY PIECE OF SOFTWARE THEY OWN. IT HAS 640K BUILT IN. IT HAS A FULL-SIZE ENHANCED KEYBOARD. CAN PARTITION A HUGE BUFFER FOR THOSE NOVELS OF YOURS. IT HAS THE BEST GRAPHIC RESOLUTION IN THE BUSINESS. IT COMES WITH SOME PRETTY IMPRESSIVE SOFTWARE AND PORTS FOR MOUSE, PRINTER, MODEM, ETC.

THE GENEVE IS THE ONLY ANSWER FOR TI UPGRADING. THANK GOODNESS IT'S A GREAT ANSWER. IN ADDITION TO THE POWERFUL DOS, THE SOFTWARE INCLUDES MYWORD (AN EXCELLENT 80-COLUMN PROCESSOR), ADVANCED BASIC (THAT GOES FAR BEYOND EXTENDED BASIC), PASCAL, GPL, AND A CARTRIDGE DOWNLOADER.

EARLY OWNERS (LIKE MYSELF) HAVE BEEN RECEIVING UPDATES OF ALL THE SOFTWARE FREE. SO OUR MACHINE KEEPS GETTING BETTER AND BETTER. AS A MATTER OF FACT, THERE IS ANOTHER WHOLE PACKAGE BEING SENT OUT BY MYARC THIS MONTH. I CAN'T WAIT. WHAT A SERVICE THIS IS!

THIS COMPUTER HAS SO MUCH SPEED THAT YOU HAVE TO SET MOST SOFTWARE ON SLOWER MODES IN ORDER TO HANDLE THE DIFFERENCE.

AND, LIKE ALL THE OTHER STUFF FROM MYARC, THIS COMPUTER IS ON A CARD THAT JUST PLUGS RIGHT INTO YOUR P-BOX. (THE MANUAL IS HUGE AND INCLUDES QUITE A SECTION ON THE SUPERB ADVANCED BASIC.) IT WILL TAKE QUITE A BIT OF TIME AND EFFORT ON THE USER'S PART TO USE THE GENEVE TO ITS FULL POTENTIAL (IF ONE CAN EVER REACH THE FULL POTENTIAL OF ANY COMPUTER). THERE ARE ALSO MANY OPTIONS (SUCH AS A 512 CARD) THAT CAN BE ADDED TO THE GENEVE. THERE IS ALSO A GROWING SOFTWARE SUPPORT. MYART IS A MOUSE-SERVED, HIGH-RESOLUTION PACKAGE. MOST TI SOFTWARE MAKERS ARE CREATING GENEVE COMPATIBILITY RIGHT AT THE START.

AND, NOW!!! BEFORE I EVEN GET A CHANCE TO START TO MASTER THE GENEVE, MYARC HAS DONE IT AGAIN!

THEY HAVE JUST RELEASED THE FIRST HARD AND FLOPPY DISK CONTROLLER WITH STREAMER TAPE BACKUP SUPPORT WITH MYARC DM-V, THE MOST INTUITIVE DM ON THE MARKET.

THE CONTROLLER INCLUDES A REAL BUILT-IN TIME CLOCK FOR FILE STAMPING; INTERFACES WITH STANDARD FLOPPY, HARD, AND STREAMER DRIVES; SUPPORT OF UP TO FOUR 5 1/4 AND/OR 3 1/2 DRIVES IN ANY CONFIGURATION; PROVIDES RAMDISK SPEED OF A HARD-DRIVE TRANSFER RATE OF 5MBIT PER SECOND. AND SO ON.

I HAVE NO PLANS IN THE IMMEDIATE FUTURE FOR HARD-DRIVING, BUT IT SURE IS NICE TO KNOW THAT MYARC IS PROVIDING THE OPTIONS IF I DO. IT IS ALSO NICE TO KNOW THAT SOME OF THE BEST MINDS IN THE TI WORLD COMMUNITY HAVE PARTICIPATED IN THE CREATION OF THESE GREAT MYARC ADVANCES.

IT IS A REAL PLEASURE TO PRESENT THIS ANNUAL AWARD TO A COMPANY THAT HAS THE TI OWNERS IN MIND AND WHO HAS BROUGHT US INTO THE HI-TECH AGE ENJOYED BY SO MANY OTHER COMPUTERS. THEIR CONTINUED SUPPORT IN THE FACE OF A LOT OF ADVERSITY IS NOT JUST COMMENDABLE BUT ASTOUNDING. MYARC DOESN'T DESERVE THE BUM REP GIVEN TO IT BY THE LOUD (BUT FORTUNATELY SMALL IN NUMBER) COMPLAINERS WHO SEEM TO NEED A SCAPEGOAT FOR THEIR OWN SELF ESTEEM.

CONGRATULATIONS, MYARC! YOU'RE DOING A GREAT JOB, LOU! KEEP IT UP.

BITS AND PIECES

by

JOE WRIGHT

Hello once again! As usual I seem to be right up against the newsletter article dead line again. Trouble is, I'm enjoying programming in FORTH so much that I have let most other things on the computer slip. Life is tough isn't it?? sigh!. While on the subject of letting one thing take all one's time. Here is this month's bit of wisdom regarding extremes.

All extremes are error. The reverse of error is not truth, but error still. Truth lies between these extremes.

CECH.

MINI MEMORY.
If you per chance read BITS and PIECES last month you may remember my saying that I would have a programme to type in this month. What prompted me to say that was an article I read in an early copy of the TIMES newsletter. The article written by Stephen Shaw demonstrated the ability to access the 8 VDP registers from TI BASIC with the Mini Memory module in the module port. I must confess to not having had a real good look at Mini Memory at all and found this article of great interest. No doubt it would be old hat to more experienced Mini Memory users but for me it is new information. That article forms the basis of the following discussion.

The video processor in the TI/994A has 8 write ONLY registers which can be used to effect the operation of the VDP chip. Only three will be fully described this month the others next month. Before actually looking at the registers it will be useful to remind ourselves of the 4 operating modes that the VDP offers us. (EA manual page 325)

1) Graphics mode.
In graphics mode, you can use the standard ASCII character set and define new characters. You can make characters and their backgrounds a variety of colours. The screen is 32 columns by 24 lines. This is the mode used by the Editor/Assembler (except when editing), TI BASIC and most applications.

2) Multicolour mode.
In multicolour mode, you can set the colours of a number of small boxes. The screen is 64 columns by 48 lines.

3) Text Mode.
In test mode, you can use the standard ASCII characters and define new characters. All characters are one colour, and the background is one colour. The screen is 40 columns by 24 line. This is the mode used by the Editor and Forth.

4) BIT-MAP
In bit-map mode, you may set any pixel (the smallest dot in the screen) on or off and make the pixels and the background a variety of colours. The screen is 256 columns by 192 lines.

In all modes except TEXT, up to 32 sprites can be created and set in motion without further programme control.

From the above it follows that if the VDP registers can be accessed in BASIC (with Mini Mem in the port) then some interesting things can be achieved from BASIC.

Lets now look in detail at the first 3 registers 0,1 and 2. (E/A Manual pages 326/327)

Register 0.
The default for Register 0 is >00 for the Editor/Assembler, TI Basic and, TI Extended Basic.

BITS 0 - 5 Reserved. Must be 000000
BIT 6 Mode bit 3, called M3. If this bit is set, the display is in bit-map mode.
BIT 7 External video enable/disable. A value of 1 enables video input and a value of 0 disables video input.

Register 1.
The default for Register 1 is >E0 in the Editor/Assembler, TI BASIC and TI Extended BASIC. NOTE: Before changing this Register, put a copy of the new value you wish it to have

at address >83D4. When a key is pressed, a copy of the value at this address is placed in Register 1.

BIT Ø 4/16K selection. A value of Ø selects 4K RAM operation, and a value of 1 selects 16K RAM operation.
BIT 1 Blank enable/disable. A value of Ø causes the active display (the entire screen) to be blank, and a value of 1 allows display on the screen. With value Ø, the screen only shows the border color.
BIT 2 Interrupt enable/disable. A value of Ø disables VDP interrupt, and a value of 1 enable VDP interrupt.
BIT 3 Mode bit 1, called M1. If this bit is set, the display is in TEXT mode.
BIT 4 Mode bit 2, called M2. If this bit is set, the display is in multicolour mode.
BIT 5 Reserved. MUST be Ø.
BIT 6 Sprite size selection. A value of Ø selects standard size sprites, and a value of 1 selects double-size sprites.
BIT 7 Sprite magnification selection. A value of Ø selects unmagnified sprites and a value of 1 selects magnified sprites.

Register 2.
The default for Register 2 is >ØØ in the EDITOR/ASSEMBLER, TI BASIC, and TI Extended BASIC.

Defines the base address of the screen image table. The screen Image Table base address is equal to the value of the Register times >4ØØ. (Decimal 1Ø24 ie. 1K)

Nothing mentioned so far is new, I have taken it all from the E/A manual, but the preamble was necessary to set the stage for what Stephen Shaw mentioned in his article. In that article Steve says that the VDP Registers can be altered from mini memory BASIC by the use of CALL PEEKV. That's right PEEKV. The following programme is taken directly from that article. Type it in try it for yourself. The programme creates two screens, by pressing the space bar you can make the programme toggle between these two screens. How does it do this, well this gets to the crux of the article. The programme firstly creates a screen of horizontal bars. This screen is then relocated from the screen image table which starts at VDP RAM address Ø, through to 768. ie. a 32X24 character screen. It is shifted to address 14336 in VDP RAM. This is done between programme lines 1ØØ/19Ø. Line 2ØØ blanks the screen, then lines 21Ø/25Ø place the words "PRESS SPACE FOR NEXT SCREEN" on the bottom line of this new screen image table. The vertical screen is then created, lines 26Ø/32Ø. Lines 33Ø/39Ø control the switching of the screen image table address in Register2 from Ø to 14366. This occurs on line 35Ø and line 38Ø. Line 35Ø alters the address to 14336 and line 38Ø restores it to Ø.

```
  1 REM  USING VDP REGISTERS
  2 REM  TO INSTANTLY CHANGE
  3 REM  SCREEN DISPLAY
  4 REM  ~~~~~~~~~~~~~~~~~~~~
  5 REM  BEFORE KEYING IN OR
  6 REM  LOADING THIS PROGRAM
  7 REM  RESERVE MEMORY;
  8 REM  IF YOU HAVE A DISK
  9 REM  SYSTEM, USE
  1Ø REM  CALL FILES(8), THEN
 11 REM  NEW
 12 REM  ELSE KEY IN
 13 REM  CALL LOAD(-31888,56,
 Ø) THEN KEY IN NEW THEN LOAD
 14 REM  ~~~~~~~~~~~~~~~~~~~~~~

 1ØØ CALL CLEAR
 11Ø PRINT "WAIT A FEW MINUTE
 S WHILE THE TWO SCREENS ARE
 SET UP"::;
 12Ø FOR T=Ø TO 5
 13Ø CALL COLOR(T+9,T+2,T+2)
 14Ø CALL HCHAR(1+T*4,1,96+T*
 8,128)
 15Ø NEXT T

 151 REM  NOW TRANSFER VERTIC
 AL BAR SCREEN TO ADDRESS 143
 36
 16Ø FOR Z=1 TO 768 STEP 24
 17Ø CALL PEEKV(Z,A,B,C,D,E,F
 ,G,H,I,J,K,L,M,N,O,P,Q,R,S,T
 ,U,V,W,X)
 18Ø CALL POKEV(Z+14336,A,B,C
 ,D,E,F,G,H,I,J,K,L,M,N,O,P,Q
 ,R,S,T,U,V,W,X)
 19Ø NEXT Z

 191 REM  WRITE TO REGISTER 1
  TO BLANK SCREEN
 2ØØ CALL PEEKV(-32352,A)
 21Ø PRINT "PRESS SPACE FOR N
 EXT SCREEN"

 211 REM  NOW TRANSFER TEXT T
 O BOTTOM OF 2ND SCREEN AREA
 22Ø FOR @=7Ø5 TO 768 STEP 32
```

```
221 REM  NOTE USE OF @ AS A
VARIABLE
230 CALL PEEKV(@,A,B,C,D,E,F
,G,H,I,J,K,L,M,N,O,P,Q,R,S,T
,U,V,W,X,Y,Z,AA,BB,CC,DD,EE,
FF)
240 CALL POKEV(@+14336,A,B,C
,D,E,F,G,H,I,J,K,L,M,N,O,P,Q
,R,S,T,U,V,W,X,Y,Z,AA,BB,CC,
DD,EE,FF)
250 NEXT @
260 CALL CLEAR

261 REM  CLEAR SCREEN AND SW
ITCH DISPLAY BACK ON
270 CALL PEEKV(-32288,A)
280 PRINT "SECOND SCREEN BEI
NG BUILT.."
290 FOR T=0 TO 5
300 CALL VCHAR(1,1+T*5,96+T*
8,120)
310 NEXT T
320 PRINT "PRESS SPACE FOR N
EXT SCREEN"
330 CALL KEY(3,A,B)
340 IF A<>32 THEN 330

341 REM  A SIMPLE PEEKV WILL
 CHANGE TO SCREEN TWO INSTAN
TLY
350 CALL PEEKV(-32242,A)
360 CALL KEY(3,A,B)
370 IF A<>32 THEN 360
380 CALL PEEKV(-32256,A)
390 GOTO 330
400 END
```

REGISTER 1.
The basic address of Register 1 is -32512. To this is added the value of each of the 8 control bits. The normal value for Register 1 is 224.

```
BIT 0, Value 128= 16K selected
BIT 1, Value  64= screen enabled
BIT 2, Value  32= Interrupts enabled
BIT 3, Value   0= Not 40 column
BIT 4, Value   0= Not Multicolour
BIT 5, Value   0= Has to be a 0 here
BIT 6, Value   0= St/dard size sprite
BIT 7, Value   0= unmagnified sprite
```

This is the normal state of Register 1 for BASIC. Adding the values of the BITS which are on we get 224.

To set this Register to this normal value we add -32512+224=-32288. This is the address that we call PEEKV.

CALL PEEKV(-32288,A) restores VDP Register 1 to it's normal value.

To blank the screen BIT 1 must be turned off. Thus 224-64=160. Now add this to -32512+160=32352.

CALL PEEKV(-32352,A) will blank the screen.

NOTE!!! The variable 'A' is a dummy variable.

Now experiment with other settings of Register 1. Note that if you disable the interrupts, you switch off the key scans etc and end up with a hung-up console.

REGISTER 2.
The BASIC address of Register 2 is -32256. This is normally set to ZERO the first memory location in VDP RAM which is the base address of the screen image table. To use the second screen in the programme a new value 14336 must be loaded into Register 2. The screen image table address is switched in 1K steps, for each 1K step that the address is altered 1 is added to the BASIC address. In our case the new address is 14336. So the amount to be added is 14336/1024=14. Therefore -32256+14=-32242. This value is used on line 350 of the programme.

One final point is that when you are going to use a second screen image table area you must ensure that the new area will not be over written. The area has to be reserved. The note in the REM's in the programme explains what to do. This large CALL FILES tells the system that a large block on memory at the high end of VDP RAM is needed for file handling. Of course it isn't used as we well know, except for our screen, but the system does not know that and leaves the area intact.

That is about all for this month on this topic, more next month. I would be interested in some feedback, for example is my concept of what is happening correct????

No room for a FORTH screen to type in. But while I am testing concepts here is a brief description of what I think FORTH is.

Without a doubt the most difficult task facing anybody who endeavours to teach a new chum FORTH is to describe FORTH in terms that will not frighten the duds of them. People who write FORTH invariably "love" FORTH while people who don't use it look down on it as gobbly

gook. So for a beginner: learning FORTH can be a daunting prospect, gobbly gook looks damn hard to learn. To me FORTH's saving grace is that once you get started into learning it and have begun to get the grasp of it the learning curve turns upward quite sharply.

So what is FORTH?? When TI FORTH is loaded into you computer a "RESIDENT FORTH VOCABULARY" is loaded into memory expansion at address >AØØØ. This "RESIDENT VOCABULARY" is a list of words available to the user. Each word will perform a specific function when it is named. (typed at the console or used in a programme).

For instance take the operator + . When it is named FORTH searches the vocabulary for +, when found the operations listed for + are performed then control returns to from where it was called.

This process is the same for all words, the unique feature of FORTH is that the user can add words to the vocabulary. When a word is added by the user it is placed in the USER DICTIONARY SPACE. This dictionary space is on top of the Vocabulary and forms an extension of it. So writing in FORTH is in actual fact adding words to the dictionary. Each new word is constructed from words already in the vocabulary or dictionary. Some example of more words which already exist are, IF, THEN, WHILE, >, =, BEGIN, SWAP etc.

Another special feature of FORTH should answer a question you must be asking. Lets look at the word + again. Obviously it adds something. FORTH uses a first in last out stack to pass parameters between words. In the case of + it would go to the stack take the two top numbers, add them then return the answer to the stack for you to use. This is called the parameter stack. (There is a second stack but not to be discussed yet). So then writting in FORTH is creating new words and manipulating the stack. Of course all the new words and stack manipulating should end up as the programme you started out to write.

I am going to have to stop here it is getting very late and I fear that I might have written more than Brian would like. More next month.

To close Richard Terry and I have decided to offer our services to run a Forth class once a month on the third Tuesday of each month at Warners Bay High School commencing at 7:ØØ pm on 28th March - all welcome but PLEASE, if you intend coming, give me a ring beforehand.

See ya next month
Joe Wright

TI DISK DRIVES

This article was written by Michael Martinko of the Lima Ohio Users Group, and came to use via the Cin-Day UG Newsletter.

My disk system presently is composed of CorComp's Disk Drive Controller & TI's original SSDD disk drive. Over the past year I have been noticing more & more disk errors, particularly in initializing new disks in a double density format. In fact, they had become so predominant that I could no longer initialize in DD. In observing the problem there appeared a pattern of madness, ie the bad sectors were in multiples of 18. Mr Randy Belisle of Belisle Interactive Systems here in Lima has proven to be a great source of computer technical information. He suggested that the TI drives are probably divided into 18 sectors, and that the drives are running slow, hence not leaving enough room for the last sector on each rotation. he also suggested that many drives are belt driven and that over the years the belt may stretch, slowing the operating speed of the drives.

The procedure for examining the drive was simple. After removing the drive from the expansion box and unplugging the connecting wires. The metal housing is removed by straightening the metal tab that protrudes into the drive and sliding off the cover. Please note that if you have previously replaced the shunt that was originally installed with dip switches to determine which drive number your drive will respond to, it will be necessary to first

remove the dip switches before the cover can be removed. You will find a series of dots on a white disk on one side of the drive. Using a florescent light on these dots will show if the drive is slow, fast or within a tolerable range. Merely plug th wires into the drive, proceed to initialize a disk, and shine the light on th drive. Mine was running slow. Noticing that the belt was smooth on the inside and textured on the outside I simply reversed the belt. Testing the drive proved my suspicions. The drive functioned perfectly. the cost was $00.00. I will however order a new belt from TI, not knowing how long this one will last! But at least I have bought enough time, maybe years, before I will need it.

U. S. A. TO OZ

HOW I GOT INVOLVED

by

BOB CARMANY

Did you ever wonder how a bloke from North Carolina got involved in the HV99 Users Group? After all, it is "only" 12,00Ø miles from here to the land "down under" and the HV99 newsletter isn't exactly a newsstand item here in the States.

Well, here is how it was done --I thought it might be of interest.

Some years ago (about 3 now) our UG got a letter from a fellow in Australia who wanted a "computer pen pal". The letter was presented at our monthly meeting and there was surprisingly little interest in starting a correspondence by the members of the group. I thought that it was worth the effort and started writing to this fellow. The result was a very lively exchange of letters with Larry Reid in Queensland, Australia.

Naturally, from a few letters back and forth the postal exchange progressed to sending a disk or two of programs back and forth as well. In one of the first exchanges was a copy of FUNLWRITER Vn 3.Ø. After the excitement subsided, a letter and donation to the "Tony McGovern Fund" was duly sent. Several letters and packets followed in both directions and Tony and I have been corresponding ever since.

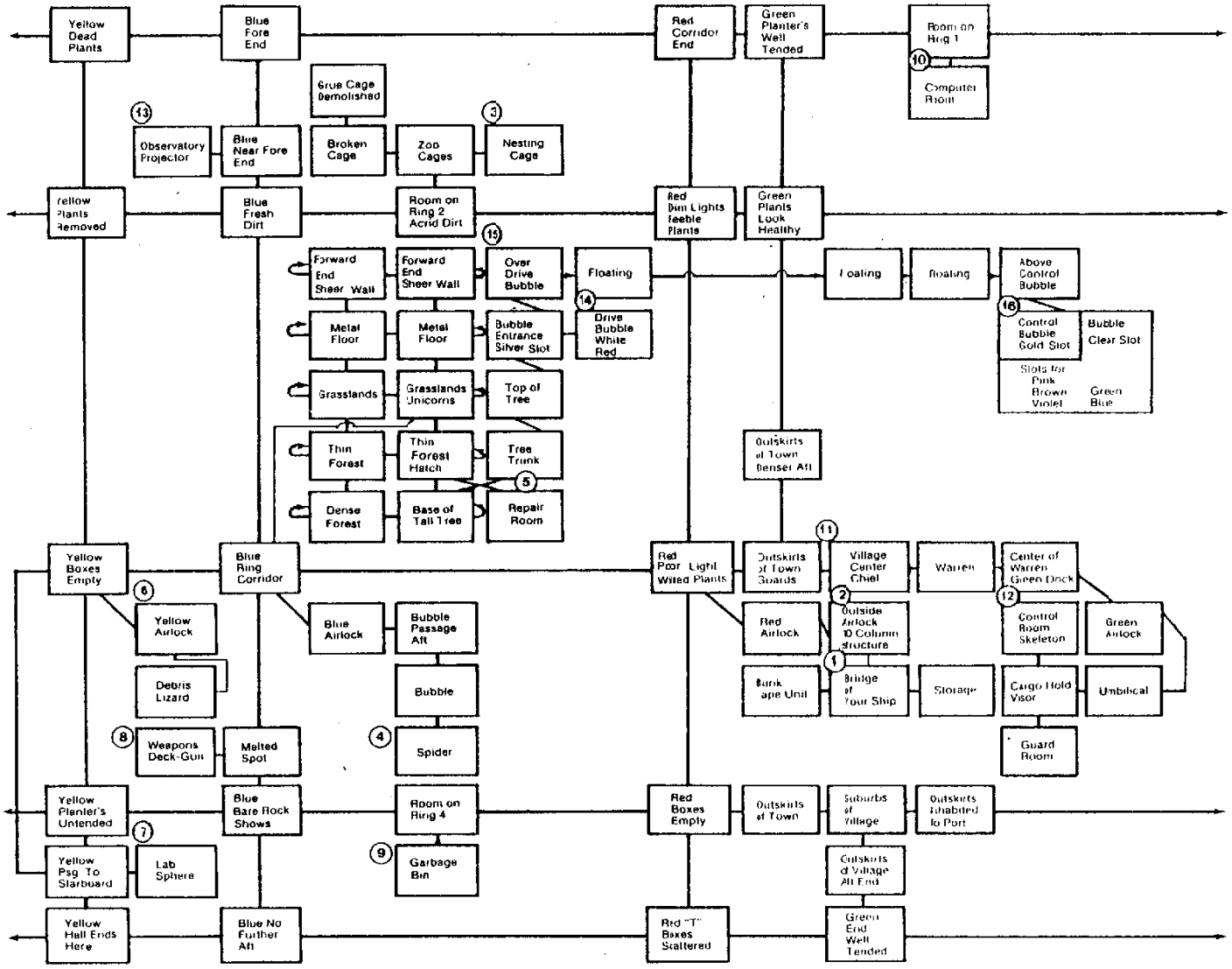
Now Larry was a bit more subtle in the next move that he made. A real "chess master" this fellow! One of the packets contained a copy of one of the HV99 newsletters. It was followed in due course by another a couple of months later --- the bait had been cast out.

It wasn't long before a letter of inquiry crossed the mailbox of the UG Secretary. How much were the dues? were back issues available? All of these questions were answered promptly and completely by the very-efficient Albert Anderson.

From there, is was a relatively easy step to send off a years dues for a membership. After a rather large packet arrived containing back issues of the HV99 newsletter, I spent several very reading days reading all of them. Still , I felt very much like an outsider as far as the UG was concerned.

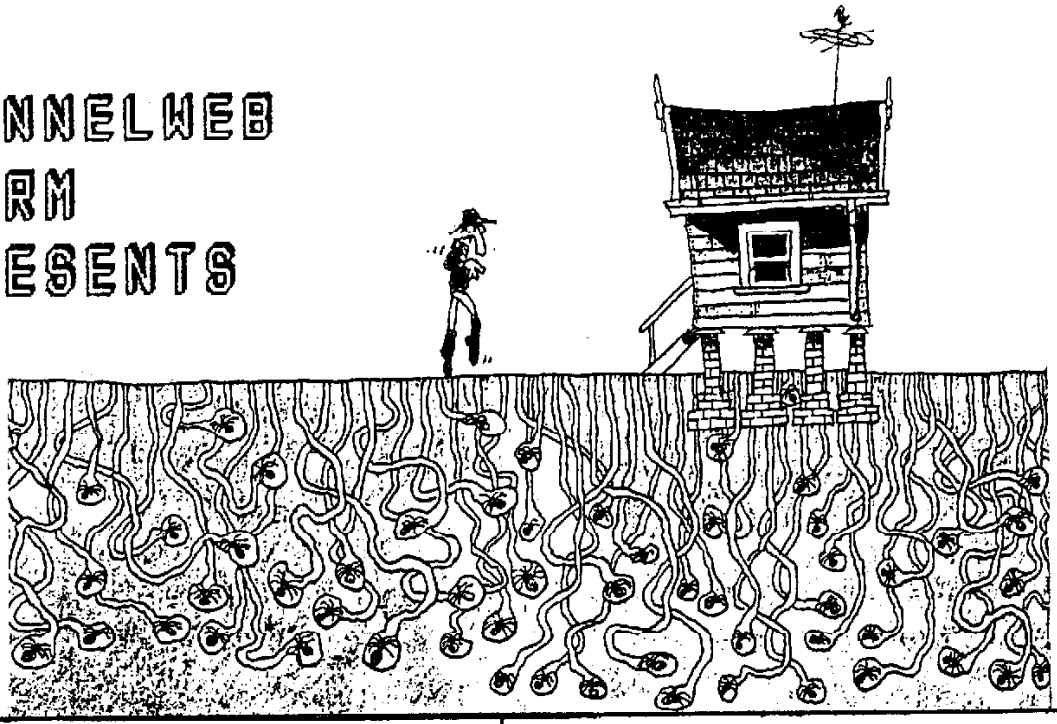
At the same time, I was winding down the Forth column that I had been writing for our Guilford 99'er UG and found some time on my hands. The temptation was just too much --- I had to do something for the UG that had been so kind and boasted such a large membership of good "mates". I extended an offer to write an "occassional" column and my monthly 'Random Bytes' is the result.

I have thoroughly enjoyed the correspondence with Will and Tony, Albert, Brian Woods, Ron (Black Hole) Kleinschafer, Larry Reid and all the rest of my "mates" in the UG. Let's hope that we go on together as a UG for many years to come!!!


Yellow Dead Plants
Blue Fore End
Red Corridor End
Green Planter's Well Tended
Room on Ring 1
10
Computer Room
Grue Cage Demolished
13
Observatory Projector
Blue Near Fore End
Broken Cage
Zoo Cages
3
Nesting Cage
Yellow Plants Removed
Blue Fresh Dirt
Room on Ring 2 Acrid Dirt
Red Dim Lights Feeble Plants
Green Plants Look Healthy
15
Forward End Sheer Wall
Forward End Sheer Wall
Over Drive Bubble
Floating
14
Drive Bubble White Red
Floating
Floating
Above Control Bubble
16
Control Bubble Gold Slot
Bubble Clear Slot
Slots for Pink Brown Violet Green Blue
Metal Floor
Metal Floor
Bubble Entrance Silver Slot
Grasslands
Grasslands Unicorns
Top of Tree
Thin Forest
Thin Forest Hatch
Tree Trunk
5
Dense Forest
Base of Tall Tree
Repair Room
Outskirts of Town Denser Aft
Yellow Boxes Empty
Blue Ring Corridor
Red Poor Light Wilted Plants
Outskirts of Town Guards
11
Village Center Chief
Warren
Center of Warren Green Dock
6
Yellow Airlock
Blue Airlock
Bubble Passage Aft
2
Outside Airlock 10 Column Structure
12
Control Room Skeleton
Green Airlock
Red Airlock
Debris Lizard
Bubble
Bunk ape Unit
1
Bridge of Your Ship
Storage
Cargo Hold Visor
Umbilical
8
Weapons Deck-Gun
Melted Spot
4
Spider
Guard Room
Yellow Planter's Untended
Blue Bare Rock Shows
Room on Ring 4
Red Boxes Empty
Outskirts of Town
Suburbs of Village
Outskirts Inhabited to Port
7
Yellow Psg To Starboard
Lab Sphere
9
Garbage Bin
Outskirts of Village Aft End
Yellow Hall Ends Here
Blue No Further Aft
Red "T" Boxes Scattered
Green End Well Tended

STARGOSS

FUNNELWEB FARM PRESENTS



DSR LINKS AND THE RS232

by

TONY McGOVERN

Perhaps the feature of the TI 99/4a that has most contributed to long life after being sent to the orphanage is its very general scheme for adding peripheral devices to the system, in a way that is independent of the internal details of any particular device. All devices are addressed in a uniform fashion as part of the file management system, and each is responsible for its own actions with its own Device Service Routine (DSR), usually in ROM, paged in for the particular card. Peripherals are called by name and the only physical preconfiguring necessary is to set the CRU base address on the peripheral card to avoid conflicts in paging the DSR where TI hadn't set a specific address. All addressing is by device name and physical location in the PE Box or even CRU assignment is not relevant to programs. This system compares more than favorably in sophistication with that on most home/personal computers even to the present day.

Most programs engage a particular peripheral device by calling a standard type of interfacing program segment called a Link to Device Service Routine (DSRLNK) which accepts the calling data in a universal specified form and handles the details of accessing the device. The data is set up in a Peripheral Access Block (PAB) which in the 99/4a is in VDP RAM with a pointer at a standard location in CPU PAD RAM. This is similar to File Control Blocks in other systems, but TI's name indicates the thoroughness of its implementation in the 99/4a. No fussing about loading "device drivers" - in the 99/4a system if a device is present it brings along its own driver. MDOS on the Geneve seems a real step back into living pre-history in this regard. Some functions are addressed directly at the hardware level in the console, video display, sound and speech, the first two for reasons of speed and the last one for sake of cheapness. There is a price paid for all this easy access by name to peripherals, and that is speed of access because the devices are not preconfigured to standard channels, and are searched for on each and every access via a DSRLNK. This can be speeded up on subsequent accesses to the same device, and going even further it is possible to address the peripheral device hardware directly if adequate performance is not otherwise

obtainable for special tasks. This is the equivalent of providing your own device driver and writing directly to the hardware. Given the RAM limitations in the 99/4a it is something a programmer does only if there is a real need for it. For a while after the 99/4a was orphaned this was no big problem as there was very little alternative hardware, but it is becoming more and more of a nuisance for software writers to keep track of the variety of PE-Box cards for each function.

The point of this article is not to go into the details of of PABs and the file management system which have all been treated extensively elsewhere, not least in the E/A manual. What I do want to talk about is the DSRLNK itself, which is a subject TI never did go into in detail. As far as I know the only release acknowledged by TI was in the commented code in the FORTH source code release. Even there the commenting is not entirely accurate. DSRLNKs come in a variety of forms in utility programs, essential variations usually being in the degree of error handling in the DSRLNK itself, and in how much internal information is saved outside the routine. The console ROM contains a DSRLNK (and does a GSRLNK for searching GROMs too) but this was not made readily accessible though it has been done. TI's own well known utility programs TI-Writer and E/A that run in memory expansion all have their own DSRLNKs, as do the E/A utilities and Mini-mem, and none use the console code.

In fact I don't even intend to go into detailed code very much if at all, but let's see what is going on. First any DSRLNK clears the Status <=>'s bit which is the prime error flag on return. Since DSRLNKs are usually BLWP routines this is done by fiddling the appropriate bit in R15 which then is loaded into the status register on leaving via RTWP. The PAB in VDP RAM is then located by the pointer stored at in PAD at >8356 (PAD is at >8300 in all 99/4a's sold though TI's DSR specifications allow for it to be anywhere, and locate it with a STWP instruction from the GPL workspace pointer at PAD+>E0). This points to the length byte of the device name in the PAB and is all stuff the calling program, be it Basic or an application program, has already set up. The name is fetched to the PAD, typically at FAC (PAD+>4A) and its length checked on the way. The device name before the first decimal point can be 7 characters long at most or the DSRLNK will return an error, though some TI-written DSRLNKs allow 8. Extra name length after the device name is handled by the DSR itself, as filename or software switch or whatever.

The next step is to search for this device name in all the DSRs. This is usually done with the GPL workspace set for the speed of being on the 16-bit bus. The DSR ROMs are turned on one at a time starting at >1000 in a standard DSRLNK and each searched for the name in the linked list of names. See the Technical Manual or other sources if you want to follow up the details. The initial pointer to this list is at >4008, an initial offset from >4000 set by the DATA 8 specified in the E/A manual to follow BLWP @DSRLNK calls. The other useful data item to follow the call is DATA 10 which starts the search in the list of subprograms, for instance to find the sector read/write routines in a disk DSR. Not all DSR calls in programs follow this format precisely. The TI-Writer Editor's DSRLNK assumes file type access only and the calls have no following DATA item. Funnelweb has followed this pattern for better or for worse - it saves some words in the main program not to have a predictable data item repeated several times. These DSRLNKs retain reasonably full generality and do a search over the whole DSR range. Simplified versions have been published which assume a particular CRU base and omit the search over DSRs. These forms are not suitable for general use. Extensions to handle multiple RAMdisks were covered in a recent article in the HV99 News and elsewhere by now.

If the device name is not found the next DSR is searched until the end is reached or the device found. When the device is found the GPL workspace is set if it is not already in use and the code entry address placed in R9 of the GPL workspace and the DSR entered by a BL *R9. TI specification for exit from a DSR is that it step over the

next word in the calling code with a INCT R11 or equivalent before returning, though no explanation is offered as to why this should be done differently from the power-up or interrupt routines. This word in the DSRLNK is usually a JMP to resume the search in the next ROM. More of this in a little while.

Standard E/A pattern DSRLNKs save some of the information gained along the way. In the E/A Utilities this is done in UTLTAB as several entries with standard names of which the following are the most important.

SAVCRU - the CRU base address of the DSR ROM where the device name was found.

SAVENT - actual entry address of the DSR

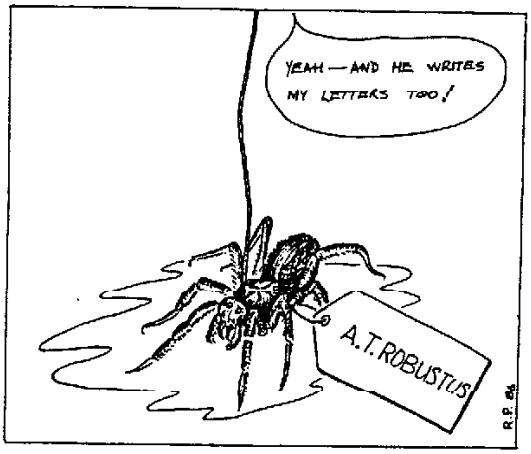
There is also SAVVER implied for version number of the DSR. If you know that you are entering the same DSR repeatedly then it is possible to speed things up by entering directly and bypassing the DSR search. The E/A 3 Load Run does this to speed reading of DF/80 Object files. This is a trick that doesn't seem to be used all that often in other software but one example is the LINEHUNTER program in the Funnelweb package which gets some of its speed by using this technique for both master and copy files.

SAVVER doesn't seem to be used by TI in the way implied by the E/A or other TI documents. This came up a few days ago in the form of a query from Geoff Trott down in Wollongong as to why there was sometimes trouble in accessing a second RS232 card in his system. This was something I had never gone into before as we have had no particular interest in communications and thus in the details of RS232. So I dug out my copy of Colin Hinson's excellent detailed exegesis of the RS232 DSR ROM and there it all was staring me in the face. In retrospect the question that needed to be answered was how two RS232 cards with exactly the same DSR ROM are usable at different CRU addresses, which is all that I understand the modifications to the second card to involve. Why then don't the device names such as RS232/3 or PIO/2 which are supposed to address the second card cause the first card to respond ? The horrible unpleasant fact is that the RS232 card uses an undocumented addition to the DSRLNK. R1 of the GPL workspace is used as a counter of the number of times a DSR of the correct name has been entered. The RS232 second card device name entries check to see if R1 contains 2 and if not exit immediately without an INCT R11 so that the search is continued. This explains the CLR R1 before the ROM search and the INC R1 before DSR entry that you will find in standard DSRLNKs. I had noticed these as seemingly useless instructions early in the development of Funnelweb. When they were removed the disk drives still worked fine but it was found a little while later that the RS232 didn't work anymore. Since this isn't a well behaved device anyway, I just put it down to an idiosyncrasy of the card and restored the code in the DSRLNK. Now I know why it is there!

This may be a new discovery down on Funnelweb Farm but it must have been known to to a number of people out there, not least those who rewrite DSRs. It may have long since been discussed on BBSs or even in UG Newsletters, but as this is the first we have seen of it here then it is probably new to most of our HV99 Newsletter readers. Now I've written that, someone will come along and point out where it has been staring me in the face all along ! I presume that someone in authority at TI insisted, when the possibility of having 2 RS232 cards in the PE-box was raised, that it be done without changing the ROM in the second card. Minor ROM changes between the two are clearly the best way to do it, but more expensive for the manufacturer. So this extra was added to DSRLNKs and has been copied ever since. In the TI-Forth source code it is commented as related to Version found, and saved at SAVVER. Nowhere is any confusion between this and the DSR ROM version stored as the second byte of the header resolved, and no TI documentation of any kind that I have seen discusses the matter and how it is used in the RS232. Perhaps they were all too embarrassed by the violation of the

essential elegance of the 99/4a system design to commit it to paper.

This all didn't explain why some DSRLNKs appeared to work with RS232/3 and others didn't even though they did implement the mechanism for counting in R1. So prompted by a reminder from Geoff Trott to this effect, I had another look at the TI-Writer DSRLNK, and sure enough there it was. What was happening that this particular DSRLNK uses R6 to store a value in between entries to card routines, and this was the register used by the RS232 DSR to do the checking of R1 by doing a LI R6 ,1 or 2 depending on the entry followed by a C R1,R6. So the first card would corrupt the DSRLNK's operation, but only when it emerged by this special exit for another whack at finding the name. I would surmise that one part of TI Lubbock never told the other parts clearly just what they had done with RS232. Remember RS232 cards were out long before TI-Writer came on the scene. This same code that causes the problems also occurs in the Assembler but the Formatter's is different, more like the E/A DSRLNK, and works without problems. The troublesome code was also incorporated in Funnelweb's LOAD/UTIL1. The problem is patchable in place and this has been done in both 40 and 80 column Editors and in LOAD/UTIL1 in issues of Funnelweb Vn 4.13 dated Mar 03/89 or later. It just goes to show that even the most thoroughly worked over code can still contain surprizes.



JUNGLE HUNT

A REVIEW

by

BRIAN WOODS

Even the Editor can't get away with it! Late last year I was 'volunteered' to write a review on a module recently arrived from the States, to be given out as a door prize at one of our monthly meetings.

My first reaction was to hand the module over to my two kids and say "Have a go at this at let me know what you think". My wife congratulated me on finding a way to keep them amused for what we hoped would be some time, allowing us to participate in some other pleasurable activity together - no you dirty minded buggers, she meant help her with the housework!!

It was all to no avail; within 15 minutes they were playing another game, claiming that "JUNGLE HUNT" was too easy!! I gave it a try and I had to agree with them - IT WAS - for them. After about 1/2 hour I tend to think that this game would be ideal for younger children, just beginning to play computer games - about 5 to 8 year olds.

The module comes with minimal instructions, but they are really unnecessary anyway. The idea of the game is to rescue your girlfriend who has been spirited away by cannibals. To find her you first have to swing through the jungle on ropes, swim through a crocodile infested river, jump over falling boulders and then (finally!!) fight off the cannibals to save your girlfriend from a fate worse than death.

You swing through the trees and jump from rope to rope by pressing the fire button at the right time. After you break free of the trees you find yourself swimming with crocodiles. You can either swim out of their way or press the fire button to stab them if you are close enough - but, as the instructions say "Beware: make sure you stab them in the snout - your knife is useless if their mouths are open". You also

run the risk of running out of oxygen, so make sure you surface to replentish your supply.

When (if?) you make it through this section of the game, you are immediately bombarded with rolling boulders. Again, by pressing the fire button you can jump over them. Left and right movements of the joystick control your forward and backward movements. Additional height can be attained if the joystick control is pushed up at the same time the fire button is pressed.

At last, the final test. You use the joystick controls to jump around the cannibals and use the fire button to jump over their spears. As the instructions say "You finally leap up to your love for a tearful reunion, followed by a reward (???) of additional bonus points for any time remaining."

In the final analysis this is definitely not a game for the more experienced computer games addict, but is best suited for the younger children - I have try it out on some young relatives and they seemed to enjoy it more than the older ones. I could not recommend rushing out and buying the module, but if you happened to win it at the monthly meeting it is probably a bargain.

LATE NEWS

This information came from Tom Arnold in his column 'News and Views' in the February issue of TI Focus, the newsletter of the Channel 99 Users Group of Ontario, Canada.

"Harry (Brashear) was telling me that he is a beta tester for PRESS. He feels that TI-Writer & all its clones will be dumped into the garbage when it is released. Having worked with advanced word processors at work I think he is right. I received a notice from Asgard stating that they were having problems debugging the program and that it would be delayed until at least February."

Just as the newsletter was being completed Albert received a letter from Terry Phillips. the Secretary of the Sydney Users Group telling us that their Group was planning to stage a TI-Faire during october/November this year. Terry asks if we support the idea, and more importantly, if we would participate.

The matter will no doubt be discussed at the next committee meeting, but if you have any thoughts on the proposal make sure you tell someone on the committee your feelings.

THE INFORMATION PAGE

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PLUS MUCH MUCH MORE!!!!!

COMING EVENTS

Next Committee Meeting: Tuesday 4th April, 1989
General Meeting: Tuesday 11th April, 1989
** ALL MEETINGS AT WARNERS BAY HIGH SCHOOL **

AGENDA FOR APRIL MEETING

Plato Educational Software demonstration

CLASSES AVAILABLE FOR MEMBERS

XB Learners Group Tuesday 21st March 7.00pm Warners Bay High.
Tuesday 18th April 7.00pm
FORTH Learners Group Tuesday 28th March - contact Joe Wright.

ANNUAL SUBSCRIPTIONS

Subscriptions to the Group cover the period 1 July to 30 June following year. Membership enquiries are welcome; please address all enquiries to the Secretary.

The annual subscription is:
Australian Residents...$25
Overseas Residents.....$45 (airmail)

Back issues of our Newsletter are available for $1 plus postage